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I am not as yet prepared to give an answer. As intimated in my report of the International Seismological Association, a special committee has been appointed to investigate this particular point.

We may sum up then the conclusions so far arrived at:

1. Microseisms are essentially due to meteorological phenomena, that is, to barometric pressure and the accompanying gradients.

2. The amplitude of microseisms is largely a function of the steepness of the barometric gradient.

3. Areas of low barometer with steep gradients, but west of Ottawa have little effect in producing microseisms.

4. Strong microseisms are almost invariably accompanied by steep gradients in the Gulf of St. Lawrence, with the St. Lawrence valley, containing the Great Champlain Fault, on a line of steep gradients.

5. A well-marked low sweeping up the Atlantic coast from Florida to Newfoundland is almost always accompanied by marked microseisms.

6. Microseisms are but slightly, if at all, influenced by the movements of lows across the continent.

7. Microseisms are not produced by local winds, frictional excitation of the earth's surface.

8. Microseisms represent vibrations in vast blocks of the earth's crust, covering tens of thousands of square miles; and the period is possibly dependent on or modified by marked geological configuration and depth.

9. Microseisms once produced may continue for some time when the immediate cause has passed.

To the above may be added that, as the microseisms are mainly dependent on the action of the low on the ocean, and as at Ottawa they are recorded *after* the low passes, the reverse should be the case in Europe, where the ocean is to the west, and the low passes over it *before* reaching the continent.

OTTO KLOTZ

SOCIETIES AND ACADEMIES

THE IOWA ACADEMY OF SCIENCE

THE sessions of the Iowa Academy of Science were held in the zoological lecture room in Blair Hall, Iowa College, Grinnell, beginning at 1:30 P.M., Friday, April 29.

The public address by Professor William A. Noyes, of the University of Illinois, on "A Scientific Revolution," was given Friday at 8:00 P.M., in the college chapel.

The Digestibility of Bleached Flour: E. W. ROCKWOOD.

The Effect of Continued Grinding on Water of Crystallization: NICHOLAS KNIGHT.

A Study in the Determination of Calcium: GEORGE W. HEISE.

A Notice on the Cast Iron Casing in Well Four at Grinnell: W. S. HENDRIXSON.

The Iowa Lakeside Laboratory (illustrated): R. B. WYLIE.

A brief account of the first session of this biological laboratory, summer, 1909, with lantern slide illustrations of the grounds, buildings and points of interest near the station.

The Flower of Elodea (illustrated): R. B. WYLIE.

Details of an undescribed type of staminate flower, which at maturity elongates similarly to the pistillate flower of this genus.

Preliminary List of the Parasitic Fungi of Fayette County, Iowa: GUY WEST WILSON.

The results of field work in this region since the autumn of 1907 are embodied in this paper. While the number of species found is quite large, and many of them of no small interest, further field work will greatly augment the list. This is especially true of the *Jung Imperfecti*, which have been least thoroughly studied.

Prairie Openings in the Forest: B. SHIMEK.

A discussion of the prairie flora of these openings, and of the conditions which cause its appearance.

The Influence of Air-currents on Transpiration: Miss MAUD A. BROWN.

An account of the results of laboratory experiments showing the effect which currents of air of various velocities have on transpiration.

Delayed Germination: L. H. PAMMEL and CHARLOTTE M. KING.

For some years we have made a study of the germination of weed seeds under different condi-

tions. The work was started in 1901 and subsequently carried out for one year by Mr. H. S. Fawcett. It was found that in many cases seed did not germinate readily in the fall, but after a period of stratification and freezing germination proceeded more readily. One of the remarkable features in this study was the great irregularity with reference to the germination of seeds. The paper cites some of the important literature on the subject with reference to delayed germination.

The Problem of Weeds in the West: L. H. PAMMEL.

A brief account of weedy plants observed in Manitoba, Saskatchewan, Alberta, British Columbia, Washington, Oregon and the region between the Rockies and the Missouri River compared with the weeds of Iowa.

Spore Formation in Lycogala exiguum: HENRY S. CONARD.

Spores are formed in the manner described by Harper for *Fuligo*, except that in *Lycogala* the spores at the periphery of the æthelium are latest to mature.

Some Geological Aspects of Artificial Drainage: G. G. WHEAT.

The Pleistocene Record of the Simpson College Well: JOHN L. TILTON.

This paper is a record of material found as an eighteen-inch well was bored one hundred and twelve feet through the Pleistocene deposits at Simpson College. It was accompanied by an oral description of variations found in other parts of Warren County.

The Aftonian Age of the Aftonian Mammalian Fauna: SAMUEL CALVIN.

Some Standardizing Tests of Stern's Tone Variator: R. H. SYLVESTER.

Discrimination Sensibility for Pitch within the Tonal Range: H. G. SCHAEFER.

The technique of past measurements on pitch discrimination within the tonal range has been overhauled within the last few years, and sources of error have been discovered. It has been the object of the present experiment to work under more perfect conditions and on a larger number of individuals, and from the results to obtain a more reliable curve.

The Technique of Pitch Discrimination Measurements: C. E. SEASHORE.

During the last few years, the technique of these measurements has been subjected to experimental criticism which has resulted in the rejection of

numerous experiments, methods and results formerly credited. It has also resulted in aggressive, constructive work reducing the physical, physiological and psychological factors in the problem to a fair degree of control, which enables us to make our measurements reliable and to get a keener insight into the nature of the problem than has heretofore been obtained.

Some Recent Discoveries concerning Behavior of Platinum-iridium Wires: LEE P. SIEG.

Concerning a Study of Kerosene Oils by Physical Methods: G. W. STEWART.

Historical Sketch of Early Health Regulations in Iowa: L. S. ROSS.

Brief account of causes leading to establishment of rules and regulations. Early ordinances; diseases most feared. Danger from cholera in river towns.

Contributions to the Herpetology of Northwestern Iowa: ALEXANDER G. RUTHVEN.

Partial results of an expedition sent by the Museum of the University of Michigan to northwestern Iowa for the purpose of obtaining representatives of the fauna of the region. An analysis of this material shows that this fauna is composed of three elements, a wide-ranging one; an eastern one associated with the lowland habitats, and a western one associated with the upland habitats.

An Annotated Catalogue of the Recent Mammals of Iowa: T. VAN HYNING.

The Persistence of Certain Mollusks: B. SHIMEK.

A discussion of certain mollusks which appear in the Aftonian and have come down to us through the several succeeding interglacial periods to the present time.

The Development of the Posterior Lymph Hearts of the Loggerhead Turtle (Thalassochelys caretta): FRANK A. STROMSTEN.

The Development of the Sympathetic Nervous System in Birds: ALBERT KUNTZ.

This paper is an attempt to further exact knowledge concerning the histogenesis of the sympathetic nervous system, to extend the author's observations on the histogenesis of the sympathetic system in mammals, and to point out certain morphogenetic differences which occur in the development of the sympathetic system in birds and mammals, with a view to their phylogenetic significance.

During the business meeting the following resolutions were adopted:

"Recognizing the primal importance of the pub-

lic health, and the inefficiency of measures which are less than national in their scope,

"Resolved, that the Iowa Academy of Science hereby expresses its hearty approval of the bill (S 6049) now under the consideration of the national congress, for the establishment of a national department of health, presided over by a secretary who shall be a member of the president's cabinet."

"By virtue of the fact that there is now a general movement for the conservation of our natural resources, both by the national authorities and more recently by the state, therefore be it

"Resolved, that the Iowa Academy of Science in session hereby reaffirms its endorsement of the general movement toward the conservation of our forests, rivers, lakes and mineral resources by the national government."

The next annual meeting of the academy will be held at Coe College, Cedar Rapids.

L. D. ROSS,
Secretary

DES MOINES, IA.

THE BOTANICAL SOCIETY OF WASHINGTON

THE May meeting of the society was held at the Ebbitt House, May 28, 1910, at eight o'clock P.M.; President Wm. A. Taylor presided.

Dr. David Griffiths illustrated a method for making permanent records of the characters of the genus *Opuntia*. Large photographs (one half natural size) are taken and from the plates two prints are made, one on velox and a second on platinum paper. The latter is made very faint and is used as an outline by the field artist who reproduces the colors of the plant from living material.

The following papers were read:

Professor Charles Fay Wheeler: W. F. WIGHT.
Published elsewhere in SCIENCE.

Starch Content of Leaves Dropped in Autumn:
L. L. HARTER.

Contrary to the accepted view that practically all food materials in leaves undergo translocation in autumn, the author found that dropped leaves of *Liquidambar*, *Ginkgo*, *Styrax* and some oaks contained starch in amounts varying from 6 to 14 per cent.

Facts Contributing to the Explanation of Grain Rust Epidemics: EDW. C. JOHNSON.

In this paper it was shown that wintering uredos, wind-blown uredospores or aëdiospores are usually present in sufficient quantities to start

rusts every year. That uredospore germination and infection in many rusts takes place most easily at the relatively low temperatures of 60° to 70° F. was demonstrated. It was further shown that wheat is particularly susceptible to infection of *Puccinia graminis* at heading time. If this period is delayed by a late season, or is unduly lengthened by reason of low temperatures the number of spores falling on each plant is proportionately increased, and the rust given unusual chances to develop. Subnormal temperatures—especially cool nights with heavy dews—are exceedingly favorable to rust infection at this time, far more so than excessive rainfall due to sudden showers with periods of high temperatures between.

An analysis was made of climatological conditions over the middle northwest during 1903, 1904 and 1905, and it was demonstrated that although precipitation and relative humidity were greatest in 1905, both during the growing and heading period, stem rust was most severe in 1904 when temperatures averaged 3.5° F. subnormal over this region, this being considerably lower than temperatures in either 1903 or 1905.

On the Transmission of Characters without Expression in Vegetables: W. W. TRACY, SR.

Red Narragansett, probably an aboriginal variety of sweet corn, was bred in one direction into Red Cory by crossing with an eight-rowed flint squaw corn of New England. From this was selected a White Cory which bred true with no trace of red for many years. From Red Narragansett was also obtained by selection Early Marblehead, and this it is surmised was carried to Russia by a missionary. Later Early Malakoff was imported from this part of Russia. This corn showed no traces of Red Narragansett. In an accidental cross of White Cory and this Malakoff corn there appeared thirteen plants which produced a corn like Red Narragansett, showing that the characters of the parent variety were carried hidden for many years, to appear again when the two strains were crossed.

A similar case of unexpressed transmission was noted in a variety of cabbage, the Early Winnigstadt, strains of which were established by selection in 1885. One of these strains showed a small percentage of Green Glaze cabbage which has been carried for twenty-five years, although no plant of Green Glaze has ever been allowed to furnish seed in this strain.

W. W. STOCKBERGER,
Corresponding Secretary